

PERSONAL DETAILS

Name: Stuart Woodhead

Age: 54

Qualifications: BSc Botany, University of Newcastle upon Tyne, 2-1 (1964)
PhD Biochemistry, University of Manchester (1968)
MRCPath (1988)
FRCPath (1996)

Appointments: Research Assistant, The Middlesex Hospital, London, 1968-1971
Lecturer in Medical Biochemistry, University of Wales College of Medicine (UWCM), Cardiff, 1971-1977
Senior Lecturer in Medical Biochemistry, UWCM, 1977-1985
Director, Supraregional Assay Service Endocrine Laboratory, University Hospital of Wales, Cardiff 1977-1996
Reader in Endocrine Biochemistry, UWCM, 1985-present

Publications: Author or co-author of 123 original scientific papers
Author or co-author of 37 chapters or reviews

Patents: Co-inventor on 5 European/US Patents

Editorial Boards: Clinica Chimica Acta
Journal of Bioluminescence and Chemiluminescence
Journal of Clinical Ligand Assay

Research Experience: Endocrine control of mineral metabolism
Laboratory diagnosis of endocrine diseases
Immunoassay technology

Teaching Experience: Regular teaching to undergraduate and postgraduate students
Supervision of 8 PhD/MD students

Other Experience: Financial management
Licensing and technology transfer
Managing Director of Molecular Light Technology Limited since 1988.

PAPERS

1. Eddy AA, Woodhead JS. An alkali-soluble glucan fraction from the cell walls of the yeast *Saccharomyces carlsbergensis*. FEBS Letters 1968; 1: 67-68.
2. Woodhead JS, O'Riordan JLH. The immunological properties of porcine parathyroid hormone. J. Endocr. 1971; 49: 79-85.
3. Addison GM, Hales CN, Woodhead JS, O'Riordan JLH. Immunoradiometric assay of parathyroid hormone. J. Endocr. 1971; 49: 521-530.
4. Woodhead JS, O'Riordan JLH, Keutmann HT, Stoltz ML, Dawson BF, Niall HD, Robinson CJ, Potts JT. Isolation and chemical properties of porcine parathyroid hormone. Biochemistry 1971; 10: 2787-2792.
5. O'Riordan JLH, Woodhead JS. Radioimmunoassay of human, porcine and bovine parathyroid hormone. Horm. Metab. Res. 1971 Suppl. Series 3: 108-112.
6. O'Riordan JLH, Kendall BE, Woodhead JS. Preoperative localisation of parathyroid tumours. Lancet 1971; ii: 1172-1175.
7. O'Riordan JLH, Woodhead JS, Robinson CJ, Parsons JA, Keutmann HT, Niall HD, Potts JT. Structure-function studies in parathyroid hormone. Proc. Roy. Soc. Med. 1971; 64: 1263-1265.
8. O'Riordan JLH, Watson L, Woodhead JS. Secretion of parathyroid hormone in primary hyperparathyroidism. Clin. Endocr. 1972; 1: 149-155.
9. O'Riordan JLH, Woodhead JS, Addison GM, Keutmann HT, Potts JT. Localisation of antigenic sites in parathyroid hormone. In Endocrinology 1971, Proceedings of the 3rd International Symposium, Ed. Taylor S, Heinemann, London, 1972; pp 386-392.
10. Clarkson EM, Luck VA, Hynson WV, Bailey RR, Eastwood JB, Woodhead JS, Clements VR, O'Riordan JLH, De Wardener HE. The effect of aluminium hydroxide on calcium, phosphorus and aluminium balances, the serum parathyroid hormone concentrations and the aluminium content of bone in patients with chronic renal failure. Clin. Sci. 1972; 43: 519-531.
11. Hesch RD, Woodhead JS, Huefner M, Wolf H. Gastrointestinal stimulation of calcitonin in adults and newborns. Horm. Metab Res. 1973; 5: 235.
12. O'Riordan JLH, Woodhead JS, Hendy GN, Parsons JA, Robinson CJ, Keutmann HT, Dawson BF, Potts JT. Effect of oxidation on biological and immunological activity of porcine parathyroid hormone. J. Endocr. 1974; 63 : 117-124.
13. Woodhead JS, Evans MJ, Scarisbrick JJ, Read G, Cameron EHD. The preparation and properties of ¹²⁵I-labelled antibodies to progesterone. In Radioimmunoassay of Steroids, 5th Tenovus Workshop. Ed. Cameron EHD, Hillier SG, Griffiths K. Alpha Omega, Cardiff, 1975; pp 269-271.
14. Milner RDG, Woodhead JS. Parathyroid hormone secretion during exchange transfusion. Arch. Dis. Child. 1975; 50: 298-303.

15. Triggs SM, Hesch RD, Woodhead JS, Williams ED. Calcitonin production by rat thyroid tumours. *J. Endocr.* 1975; **66**: 37-43.
16. Buchanan G, West TET, Woodhead JS, Lowy C. Hypoparathyroidism following pharyngolaryngo-oesophagectomy. *Clin. Oncol.* 1975; **1**: 89-96.
17. Hesch RD, McIntosh CHS, Woodhead JS. New aspects of radioimmunochemical measurement of human parathyroid hormone using the labelled antibody technique. *Horm. Metab. Res.* 1975; **7**: 347-352.
18. Walton RJ, Russell RGG, Smith R, Kanis JA, Woodhead JS. Effects of a diphosphonate (disodium ethane-1-hydroxy-1,1-diphosphonate EHDP) on phosphate transport in man. In *Phosphate Metabolism, Kidney and Bone*. Ed. Avioli L, Bordier P, Fleisch H, Massry S, Slatopolsky E. Armour Montagu, Paris, 1976; pp 329-343.
19. Kasemsuth R, Davies SJ, Woodhead JS, Peacock M. Immunoradiometric and two-site assay of parathyroid hormone. *Calc. Tissue Res.* 1977; **22** (suppl.): 442-445.
20. Woodhead JS, Davies SJ, Lister D. Two-site assay of bovine parathyroid hormone. *J. Endocr.* 1977; **73**: 279-288.
21. Ellis G, Woodhead JS, Cooke WT. Serum 25-hydroxyvitamin D concentrations in adolescent boys. *Lancet* 1977; **i**: 825-828.
22. Walker DA, Davies SJ, Siddle K, Woodhead JS. Control of renal tubular phosphate reabsorption by parathyroid hormone in man. *Clin. Sci. Mol. Med.* 1977; **53**: 431-438.
23. Senator GB, Rainbow SJ, Greenwood RF, Mahler RF, Woodhead JS, Hales CN. Plasma C-peptide measurement in the diagnosis of pancreatic insulinoma with special reference to insulin induced hypoglycaemia. In *Proceedings of the First International Symposium on C-peptide*. Ed Beyer J, Kraus U, Naegele W, Schnetztor Verlag, Konstanz, 1977; pp 185-196.
24. McMahon MJ, Woodhead JS, Hayward RD. The nature of hypocalcaemia in acute pancreatitis. *Br. J. Surg.* 1978; **65**: 216-218.
25. Compston JE, Horton LWL, Laker MF, Ayers AB, Woodhead JS, Bull HJ, Gazet JC, Pilkington TRE. Bone disease after jejuno-ileal bypass for obesity. *Lancet* 1978; **ii**: 1-4.
26. Compston JE, Horton LWL, Bull HJ, Laker MF, Ayers AB, Woodhead JS, Gazet JC, Pilkington TRE. Osteomalacia after jejuno-ileal bypass for obesity. In *Medical Complications of Obesity*. Ed Mancini M, Lewis B, Contaldo F. Proceedings of Sero Symposium, Academic Press, New York, 1979; **26**: 395-398.
27. Simpson JSA, Campbell AK, Ryall MET, Woodhead JS. A stable chemiluminescent labelled antibody for immunological assays. *Nature* 1979; **279**: 646-647.
28. Compston JE, Horton LWL, Laker MF, Ayers AB, Woodhead JS, Clemens TL, Fraher L, Pilkington TRE. Bone disease after jejuno-ileal bypass for obesity: response to oral 1 α -hydroxyvitamin vitamin D₃ therapy. In *Vitamin D-Basic Research and its Clinical Application*. Ed Harel I, Schafer KV, Herrath D, Grigoleit HG, Coburn JW, DeLuca HF, Mawer EB, Suda T. De Gruyter, Berlin, 1979; pp 1095-1098.
29. Rainbow SJ, Woodhead JS, Yue DK, Luzio SD, Hales CN. Measurement of human proinsulin by an indirect two-site immunoradiometric assay. *Diabetologia* 1979; **17**: 229-234.

30. Douglas DL, Duckworth T, Russell RGG, Kanis JA, Preston CJ, Prenton MA, Woodhead JS. Effect of dichloromethylene diphosphonate in Paget's disease of bone and in hypercalcaemia due to primary hyperparathyroidism or malignant disease. *Lancet* 1980; **i**: 1043-1047.
31. Compston JE, Horton LWL, Laker MF, Merrett AL, Woodhead JS, Gazet JC, Pilkington TRE. Treatment of bone disease after jejuno-ileal bypass for obesity with oral 1 α -hydroxyvitamin D₃. *Gut* 1980; **21**: 669-674.
32. Douglas DL, Duckworth T, Kanis JA, Preston C, Beard DJ, Smith TWD, Underwood I, Woodhead JS, Russell RGG. Biochemical and clinical responses to dichloromethylene diphosphonate (Cl₂MDP) in Paget's disease of bone. *Arthritis & Rheumatism* 1980; **23**: 1185-1192.
33. Compston JE, Crowe JP, Wells IP, Horton LWL, Hirst D, Merrett AL, Woodhead JS, Williams R. Vitamin D prophylaxis in osteomalacia in chronic cholestatic liver disease. *Digestive Dis. Sci.* 1980; **25**: 28-32.
34. Handslip PD, Bone M, Woodhead JS, Davies BH. Calcium and phosphate metabolism in sarcoidosis with particular reference to parathyroid function. *Brit. J. Dis. Chest* 1980; **75**: 55-60.
35. Woodhead JS, Kemp HA, Nix ABJ, Rowlands RJ. External quality assessment of serum α -fetoprotein assays. *Ann. Clin. Biochem.* 1980; **17**: 332-333.
36. Woodhead JS, Kemp HA, Nix ABJ, Rowlands RJ, Kemp KW, Wilson DW, Griffiths K. The control of performance in immunoassay. In *Immunoassays for the 80s*. Ed Voller A, Bartlett A, Bidwell D. MTP, Lancaster, 1981; pp 169-184.
37. Compston JE, Dutt MK, Mitchell WD, Nunan TO, Woodhead JS. The effect of 1 α -hydroxyvitamin D₃ on renal function in normal subjects. *Metab. Bone Dis. Rel. Res.* 1981; **2**: 297-299.
38. Woodhead JS, Simpson JSA, Davies SJ, Foster H, Davies CJ. Accuracy and precision in automated immunoassay systems. In *Quality Control in Clinical Endocrinology*. Ed Wilson DW, Gaskell S, Griffiths K. Alpha Omega, Cardiff, 1981; pp 117-125.
39. Simpson JSA, Campbell AK, Woodhead JS, Richardson A, Hart R, McCapra F. Chemiluminescent labels in immunoassay. In *Proceedings of the Second International Symposium on Bioluminescence and Chemiluminescence*. Ed McElroy W, DeLuca M. Academic Press, New York, 1981; pp 673-679.
40. Kadury S, John R, Woodhead JS, Kurtz AB. Automated radioimmunoassay of total and free thyroxine in human serum. *Ann. Clin. Biochem.* 1981; **18**: 97-101.
41. Rodriguez-Arnan MD, Gomez-Pan A, Rainbow SJ, Woodhead JS, Comaru-Schally AM, Schally AV, Meyers CA, Coy DH, Hall R. Effects of prosomatostatin on the growth hormone and prolactin responses to arginine in man: comparison with somatostatin. *Lancet* 1981; **i**: 353-356.
42. Plaas HAK, Woodhead JS, Cryer A. The use of antiserum with specific reactivity towards fat cell surface antigens to follow the progression of 3T3-L1 preadipocyte differentiation in vitro. *Biosci. Rep.* 1981; **1**: 207-216.

43. Woodhead JS, Simpson JSA, Weeks I, Patel A, Campbell AK, Hart R, Richardson A, McCapra F. Chemiluminescent labelled antibody techniques. In *Monoclonal Antibodies and Developments in Immunoassay*. Ed Albertini A, Ekins RP. Elsevier/North Holland, Amsterdam, 1981; pp 135-145.
44. Weeks I, Kemp HA, Woodhead JS. Two-site assay of human α 1-fetoprotein using ^{125}I -labelled monoclonal antibodies. *Biosci. Rep.* 1981; **1**: 785-791.
45. Kemp HA, Simpson JSA, Woodhead JS. Automated two-site immunoradiometric assay of alphafetoprotein in human serum. *Clin. Chem* 1981; **27**: 1388-1391.
46. Compston JE, Vedi S, Merrett AL, Clemens TL, O'Riordan JLH, Woodhead JS. Privational and malabsorption metabolic bone disease: plasma vitamin D metabolite concentrations and their relationship to quantitative bone histology. *Metab. Bone Dis. Rel. Res.* 1981; **3**: 165-170.
47. Woodhead JS, Weeks I, Campbell AK, Ryall MET, Hart R, Richardson A, McCapra F. Chemiluminescence labelled antibodies and their applications in immunoassays. In *Luminescent Assays: Perspectives in Endocrinology and Clinical Chemistry*. Ed Serio M, Pazzagli M. Raven Press, New York, 1982; pp 147-155.
48. Patel A, Woodhead JS, Campbell AK, Hart RC, McCapra F. The preparation and properties of a chemiluminescent derivative of 17β -estradiol. In *Luminescent Assays: Perspectives in Endocrinology and Clinical Chemistry*. Ed Serio M, Pazzagli M. Raven Press, New York, 1982; pp 181-189.
49. McMahon MJ, Heyburn PJ, Playforth MJ, Woodhead JS. Parathyroid function during acute pancreatitis. *Brit. J. Surg.* 1982; **69**: 95-98.
50. Harrop JS, Bailey JE, Woodhead JS. Incidence of hypercalcaemia and primary hyperparathyroidism in relation to the biochemical profile. *J. Clin. Pathol.* 1982; **35**: 395-400.
51. John R, Woodhead JS. An automated immunoradiometric assay of thyrotropin (TSH) in dried blood filter paper spots. *Clin. Chim. Acta* 1982; **125**: 329-340.
52. Patel A, Morton MS, Woodhead JS, Ryall MET, McCapra F, Campbell AK. A new chemiluminescent label for use in immunoassay. *Biochem. Soc. Trans.* 1982; **10**: 224-225.
53. Weeks I, McCapra F, Campbell AK, Woodhead JS. Immunoassays using chemiluminescent labelled antibodies. In *Immunoassays for Clinical Chemistry*. Ed. Hunter WM, Corrie JET. Churchill Livingstone, Edinburgh, 1983; pp 525-530.
54. Douglas DL, Kanis JA, Paterson AD, Beard DJ, Cameron EC, Watson ME, Woodhead JS, Williams J, Russell RGG. Drug treatment of primary hyperparathyroidism: use of clodronate disodium. *Brit. Med. J.* 1983; **286**: 587-590.
55. Lazarus JH, John R, Ginsberg J, Hughes IA, Shewring G, Smith BR, Woodhead JS, Hall R. Transient neonatal hyperthyrotrophinaemia: a serum abnormality due to transplacentally acquired antibody to thyroid stimulating hormone. *Brit. Med. J.* 1983; **286**: 592-594.
56. Weeks I, Beheshti I, McCapra F, Campbell AK, Woodhead JS. Acridinium esters as high specific activity labels in immunoassay. *Clin. Chem.* 1983; **29**: 1474-1479.
57. Weeks I, Campbell AK, Woodhead JS. Two-site immunochemiluminometric assay for human α 1-fetoprotein. *Clin. Chem.* 1983; **29**: 1480-1483.

58. Roberts CJ, Elder GH, Laurence KM, Woodhead JS, Hibbard B, Evans KT, Roberts A, Robertson IB, Hoole M. The efficacy of a serum screening service for neural-tube defects: the South Wales experience. *Lancet* 1983; **i**: 1315-1318.
59. Lucas PA, Brown RC, Bloodworth L, Woodhead JS. Vitamin D metabolites in hypercalcaemic adults after kidney transplantation. *Proc. Eur. Dialysis Transplant Assoc.* 1983; **20**: 213-219.
60. John R, Kadury S, Woodhead JS, Pritchard MH. Fenclofenac and thyroid function tests. *Ann. Clin. Biochem.* 1983; **20**: 381-382.
61. Lucas PA, Brown RC, Woodhead JS, Coles GA. Ratio of parathyroid hormone to 1,25-dihydroxycholecalciferol in early renal failure. *Kidney International* 1984; **24** (Suppl. 16): 171-174.
62. Weeks I, Sturgess ML, Siddle K, Jones MK, Woodhead JS. A high sensitivity immunochemiluminometric assay for human thyrotrophin. *Clin. Endocr.* 1984; **20**: 489-495.
63. Cryer A, Gray BR, Woodhead JS. Studies on the characterization of bovine adipocyte precursor cells and their differentiation in vitro using an indirect labelled second antibody cellular immunoassay. *J Developmental Physiol.* 1984; **6**: 159-176.
64. Kumar S, Mansel RE, Hughes LE, Woodhead JS, Edwards CA, Scanlon MF, Newcombe RG. Prolactin response to thyrotrophin releasing hormone stimulation and dopaminergic inhibition in benign breast disease. *Cancer* 1984; **53**: 1311-1315.
65. Weeks I, Woodhead JS. Two-site immunochemiluminometric assay for serum ferritin. *Clin. Chim. Acta* 1984; **141**: 275-280.
66. Lazarus JH, Burr ML, McGregor AM, Weetman AP, Ludgate M, Woodhead JS, Hall R. The prevalence and progression of autoimmune thyroid disease in the elderly. *Acta Endocr.* 1984; **106**: 199-202.
67. Kumar S, Mansel RE, Scanlon MF, Hughes LE, Edwards CA, Woodhead JS, Newcombe RG. Altered responses of prolactin, luteinizing hormone and follicle stimulating hormone secretion to thyrotrophin releasing hormone/gonadotrophin releasing hormone stimulation in cyclical mastalgia. *Br. J. Surg.* 1984; **71**: 870-873.
68. Weeks I, Morgan BP, Campbell AK, Woodhead JS. Measurement of C9 concentrations using an immunochemiluminometric assay. *J. Immunol. Meth.* 1985; **80**: 33-38.
69. Hullin DA, Woodhead JS. Evaluation of a commercial immunoenzymometric assay for alpha-fetoprotein. *Clin. Chem.* 1985; **31**: 1868-1870.
70. Peters JR, Rodriguez-Arnan MD, Foord SM, Edwards CA, Dieguez C, Woodhead JS, Hall R, Scanlon MF. Differential effects of acute DA receptor blockade with domperidone on LH and TSH release in patients with hyperprolactinaemia. *J. Endocrinol. Invest.* 1985; **8**: 163-166.
71. Harries AD, Brown RC, Heatley RV, Williams LA, Woodhead JS, Rhodes J. Vitamin D status in Crohn's disease: association with nutrition and disease activity. *Gut* 1985; **26**: 1197-1203.

72. Evans PJ, Weeks I, Jones MK, Woodhead JS, Scanlon MF. The circadian variation of thyrotrophin in patients with primary thyroidal disease. *Clin. Endocr.* 1986; **24**: 343-348.
73. Lucas PA, Brown RC, Woodhead JS, Coles GA. 1,25-dihydroxycholecalciferol and parathyroid hormone in advanced chronic renal failure: effects of simultaneous protein and phosphorus restriction. *Clin. Nephrol.* 1986; **25**: 7-10.
74. Sturgess ML, Weeks I, Mpoko CN, Laing I, Woodhead JS. Chemiluminescent labelled-antibody assay for thyroxine in serum, with magnetic separation of the solid phase. *Clin. Chem.* 1986; **32**: 532-535.
75. Weeks I, Woodhead JS. Measurement of human growth hormone (hGH) using a rapid immunochemiluminometric assay. *Clin. Chim. Acta* 1986; **159**: 139-145.
76. Lucas PA, Brown RC, Woodhead JS. Acute responses of parathyroid hormone and 1,25 dihydroxyvitamin D3 to unilateral nephrectomy in healthy donors. *Nephrol. Dial. Transplant.* 1986; **1**: 199-203.
77. Evans PJ, Weeks I, Woodhead JS, Scanlon MF. Circulating TSH levels measured with an immunochemiluminometric assay in patients taking drugs interfering with biochemical thyroid status. *Clin. Endocr.* 1987; **26**: 717-721.
78. Sturgess ML, Weeks I, Evans PJ, Mpoko CN, Laing I, Woodhead JS. An immunochemiluminometric assay for serum free thyroxine. *Clin. Endocr.* 1987; **27**: 383-393.
79. Brown RC, Aston JP, Weeks I, Woodhead JS. Circulating intact parathyroid hormone measured by a two-site immunochemiluminometric assay. *J. Clin. Endocr. Metab.* 1987; **65**: 407-414.
80. Lazarus JH, Davies CJ, Woodhead JS, Walker DA, Owen GM. Effect of lithium on the metabolic response to parathyroid hormone. *Mineral Electrolyte Metab.* 1987; **13**: 63-66.
81. Horton JK, Davies M, Woodhead JS, Weeks I. A new and rapid immunochemiluminometric assay for the measurement of Tamm-Horsfall glycoprotein. *Clin. Chim. Acta* 1988; **174**: 225-238.
82. Bagazgoitia FJ, Garcia JL, Dieguez C, Weeks I, Woodhead JS. Effect of surfactants on the intensity of chemiluminescence emission from acridinium ester labelled proteins. *J. Biolumin. Chemilumin.* 1988; **2**: 121-128.
83. Aston JP, Wheeler MH, Brown RC, Curley IR, Woodhead JS. Studies on in vivo and in vitro release of intact parathyroid hormone using a new two-site immunochemiluminometric assay. *World J. Surg.* 1988; **12**: 454-462.
84. St John A, Davies C, Riley WJ, Kent GN, Brown RC, Aston JP, Weeks I, Woodhead JS. Comparison of the performance and clinical utility of a carboxy-terminal assay and an intact assay for parathyroid hormone. *Clin. Chim. Acta* 1988; **178**: 215-223.
85. Lucas PA, Woodhead JS, Brown RC. Vitamin D3 metabolites in chronic renal failure and after renal transplantation. *Nephrol. Dial. Transplant* 1988; **3**: 70-76.
86. Brown RC, Aston JP, St John A, Woodhead JS. Comparison of poly- and monoclonal antibodies as labels in a two-site immunochemiluminometric assay for intact parathyroid hormone. *J. Immunol. Meth.* 1988; **109**: 139-144.

87. Aston JP, Brown RC, Curley IR, Wheeler MH, Woodhead JS. Secretion of intact parathyroid hormone by dispersed human hyperparathyroid cells. *Clin. Endocr.* 1988; **29**: 643-648.
88. Bagazgoitia FJ, Garcia JL, Ibarra JM, Patino R, Dieguez C, Weeks I, Woodhead JS. Chemiluminescence immunoassay (CLIA) for urinary albumin. *J. Biolumin. Chemilumin.* 1989; **3**: 169-174.
89. Horton JK, Davies M, Woodhead JS, Weeks I. A rapid and sensitive method for estimating low concentrations of albumin in human urine. *Clin. Chim. Acta* 1989; **186**: 45-52.
90. Beaman J, Woodhead JS, Liewendahl K, Mahonen H. The evaluation of a chemiluminescent assay for free thyroxine by comparison with equilibrium dialysis in clinical samples. *Clin. Chim. Acta* 1989; **186**: 83-90.
91. Compston JE, Silver AC, Croucher PI, Brown RC, Woodhead JS. Elevated serum intact parathyroid hormone levels in elderly patients with hip fracture. *Clin. Endocr.* 1989; **31**: 667-672.
92. Beaman J, Woodhead JS. A simplified strategy for testing thyroid function. *Clin. Chem.* 1989; **35**: 828-830.
93. Bittar RE, Ratcliffe PJ, Richardson AJ, Brown RC, Woodhead JS, Morris PJ. Hyperparathyroidism, hypertension and loop diuretic medication in renal transplant recipients. *Nephrol. Dial. Transplant* 1989; **4**: 740-744.
94. Finucane P, Rudra T, Church H, Hsu R, Newcombe R, Pathy MSJ, Scanlon MF, Woodhead JS. Thyroid function tests in elderly patients with and without an acute illness. *Age Ageing* 1989; **18**: 398-402.
95. Aston JP, Wheeler MH, Brown RC, Curley IR, Woodhead JS. Laboratory comparison of diagnostic specificity of intact hormone and region specific immunoassays of parathyroid hormone. *World J. Surg.* 1990; **14**: 419-424.
96. Batmanghelich S, Woodhead JS, Smith K, Weeks I. Synthesis and chemiluminescent evaluation of a series of phenyl N-alkylacridinium 9-carboxylates. *J. Photochem Photobiol.* 1991; **56**: 249-254.
97. Woodhead JS, Weeks I. Immunochemiluminometric assays based on acridinium labels with a microtiter plate luminometer. *Clin. Chem.* 1991; **37**: 472.
98. Finucane P, Rudra T, Hsu R, Newcombe R, Pathy MSJ, Scanlon MF, Woodhead JS. Thyrotropin response to thyrotropin-releasing hormone in elderly patients with and without an acute illness. *Age Ageing* 1991; **20**: 85-89.
99. Brown RC, Silver AC, Woodhead JS. Binding and degradation of NH₂-terminal parathyroid hormone by opossum kidney cells. *Am. J. Physiol.* 1991; **260**: E544-E552.
100. Turner G, Brown RC, Silver AC, Seymour G, Woodhead JS. Renal insufficiency and secondary hyperparathyroidism in elderly patients. *Ann. Clin. Biochem.* 1991; **28**: 321-326.
101. Davis TME, Pukrittayakamee S, Woodhead JS, Holloway P, Chaivisuth B, White NJ. Calcium and phosphate metabolism in acute falciparum malaria. *Clin. Sci.* 1991; **81**: 297-304.

102. Ferguson CJ, Williams JD, Silver AC, Woodhead JS, Salaman JR. Effects of parathyroid hormone on delayed renal allograft function. *Brit. Med. J.* 1991; **303**: 287-288.
103. Batmanghelich S, Brown RC, Woodhead JS, Weeks I, Smith K. Preparation of a chemiluminescent imidoester for the non-radioactive labelling of proteins. *J. Photochem. Photobiol.* 1992; **12**: 193-291.
104. Weeks I, Woodhead JS, Lucas I. Development of a chemiluminescence immunoassay for the detection of hepatitis B surface antigen. *Anal. Chim. Acta* 1992; **266**: 201-204.
105. Finucane P, Nicklason F, Dewar R, Woodhead JS. Thyroid function tests in sick euthyroid elderly patients: a longitudinal study. *J. Clin. Exp. Gerontol.* 1992; **14**: 111-124.
106. Page MD, Edwards CA, Brown RC, Weeks I, Woodhead JS, Scanlon MF. Immunochemiluminometric assays (ICMA) specific for growth hormone releasing hormone 1-44 NH₂ and 1-40 OH. *Clin. Chim. Acta* 1992; **210**: 167-178.
107. Raine AEG, Bedford L, Simpson AWM, Ashley CC, Brown RC, Woodhead JS, Ledingham JGG. Hyperparathyroidism, platelet intracellular free calcium and hypertension in chronic renal failure. *Kidney International* 1993; **43**: 700-705.
108. Turner G, Brown RC, Weeks I, Butler GE, Creagh FN, Woodhead JS. Urinary growth hormone excretion as measured by a sensitive immunochemiluminometric assay. *Ann. Clin. Biochem.* 1993; **30**: 180-185.
109. Turner G, Skinner A, Woodhead JS. Urinary growth hormone measurements in children with renal insufficiency. *Ann. Clin. Biochem.* 1993; **30**: 540-544.
110. Bundred NJ, Maddox PR, Woodhead JS, Jenkinson LR, Wheeler MH. Screening for multiple endocrine neoplasia type I. *Acta Chirug. Austriaca* 1993; **25**: 55-58.
111. Turner G, Coates P, Porter S, Peters JR, Woodhead JS. Urinary growth hormone measurements as a marker of renal tubular function in diabetes mellitus. *Clin. Chim. Acta* 1993; **220**: 19-30.
112. Alfaham M, Woodhead JS, Pask G, Davies DP. Vitamin D deficiency: a concern in pregnant Asian women. *Brit. J. Nutr.* 1995; **73**: 881-887.
113. Neonakis E, Wheeler MH, Krishnan H, Coles GA, Davies F, Woodhead JS. Results of surgical treatment of renal hyperparathyroidism. *Arch. Surg.* 1995; **130**: 643-648.
114. Woodhead JS. Immunoassay design: the theory and the practice. *J Clin Ligand Assay* 1996; **19** (suppl): 74-81.
115. Sadler GP, Jones DL, Woodhead JS, Horgan KH, Wheeler MH. Effect of growth factors on growth of bovine parathyroid cells in serum-free medium. *World J Surg* 1996; **20**: 822-829.
116. Lamb EJ, Fluck RJ, Venton TR, Woodhead JS, Raine AEG, Dawnay ABStJ. Effects of parathyroid hormone and 1,25(OH)₂D₃ on protein glycation in moderate uraemia. *Nephron* 1996; **74**: 295-300.

117. Turner G, Coates P, Woodhead JS, Peters JR. Proximal tubular reabsorption of growth hormone and sodium/fluid in normo- and microalbuminuric insulin-dependent diabetes mellitus. *Acta Diabetol* 1997; **34**: 27-32.

118. Johansen A, Stone MD, O'Mahoney MS, Westlake H, Woodhead JS, Woodhouse K. Reliability of parathyroid hormone measurements in the period immediately following hip fracture. *Age & Ageing* 1997; **26**: 175-178.

119. Aston JP, Hitchings EJ, Ball RL, Weeks I, Woodhead JS. Water immiscible solvent based immunoassay. *Journal of Immunoassay* 1997; **18**: 235-246.

CHAPTERS AND REVIEWS

1. Woodhead JS, Addison GM, Hales CN. The Immunoradiometric assay and related techniques. *Brit. Med. Bull.* 1974; **30**: 44-49.
2. Hales CN, Woodhead JS. Immunological techniques and the assay of human pituitary glycoprotein hormones. *Biochem. Soc. Trans.* 1974; **2**: 787-791.
3. Hales CN, Beck P, Evans MJ, Woodhead JS. Recent developments and the immunoradiometric technique. In *Radioimmunoassay in Clinical Biochemistry*. Ed. Pasternak CA, Heyden, London, 1975; pp283-288.
4. O'Riordan JLH, Woodhead JS. Immunoradiometric assay of parathyroid hormone in serum. In *Methods of Hormone Analysis*. Ed. Breuer H, Hamel D, Kruskemper HL. Thieme Verlag, Stuttgart, 1976; pp 66-76.
5. Woodhead JS, Walker DA. The assay of parathyroid hormone in human serum and its uses. *Ann. Clin. Biochem.* 1976; **13**: 549-554.
6. Woodhead JS, Davies SJ, Djurovic N. The specificity of immunological assays. *Tumour Markers; Sixth Tenovus Workshop*. Ed. Griffiths K, Neville AM, Pierrepont CG. Alpha Omega, Cardiff, 1978; pp 263-269.
7. Hales CN, Woodhead JS. Labeled antibodies and their use in the immunoradiometric assay. In *Methods in Enzymology*. Ed. van Vunakis H, Langone JJ. Academic Press, New York, 1980; **70**: 334-355.
8. Woodhead JS, Thompson RJ. Immunological techniques in biochemical investigation. In *Methods in Neurobiology*. Ed. Lahue R. Plenum, New York, 1981; pp 425-454.
9. Lucas PA, Woodhead JS. The assessment of parathyroid function. In *Clinical Endocrinology, 2: Calcium Disorders*, Ed. Heath DA, Marx SJ. Butterworth, London, 1982; pp 92-113.
10. Kemp HA, John R, Woodhead JS. Labeled antibody immunoassays. *Ligand Quarterly* 1982; **5**: 27-34.
11. Woodhead JS. Regulation of whole body calcium in man. Ed. Elkeles RS, Tavill AS. Blackwell, London, 1983; pp 217-246.
12. Brown RC, Lucas PA, Woodhead JS. Endocrine and nutritional aspects of rickets. In *Topics in Paediatric Nutrition*. Ed. Dodge JA. Pitman, London, 1983; 159-169.
13. Weeks I, Woodhead JS. Chemiluminescence immunoassay. *J. Clin. Immunoassay* 1984; **7**: 82-89.
14. Weeks I, Campbell AK, Woodhead JS, McCapra F. Immunoassays using chemiluminescent labels. In *Practical Aspects of Immunoassay*. Ed. Butt WR. Marcel Dekker, New York, 1984; pp 103-116.
15. Kemp HA, John R, Woodhead JS. Labeled antibody immunoassays. In *Practical Immunoassay*. Ed. Butt WR. Marcel Dekker, New York, 1984; pp 179-198.

16. Woodhead JS, Sturgess ML, Jones MK, Weeks I. Chemiluminescence labels in immunoassay. In *Monoclonal antibodies and new trends in immunoassays*. Ed. Bizollon CA. Elsevier, Amsterdam, 1984; pp 165-174.
17. Woodhead JS, Weeks I. Circulating thyrotrophin as an index of thyroid function. *Ann. Clin. Biochem.* 1985; **22**: 455-459.
18. Woodhead JS, Weeks I. Chemiluminescence immunoassay. *Pure Appl. Chem.* 1985; **57**: 523-529.
19. Weeks I, Sturgess ML, Woodhead JS. Chemiluminescence immunoassay: an overview. *Clin. Sci.* 1986; **70**: 403-408.
20. Weeks I, Woodhead JS. Use of monoclonal antibodies in a sensitive chemiluminescent assay for thyrotropin. In *Monoclonal Antibodies: Basic Principles, Experimental and Clinical Applications in Endocrinology*. Ed. Fort G, Lipsett MB, Serio M. Sero Symposia. Raven Press, New York, 1986; **30** : 41-48.
21. Weeks I, Sturgess ML, Brown RC, Woodhead JS. Immunoassays using acridinium esters. In *Methods in Enzymology*. Ed. DeLuca M, McElroy WD. Academic Press, New York, 1986; **133**: 366-387.
22. Weeks I, Woodhead JS. Chemiluminescence Immunoassay: a new diagnostic technology. In *Chronobiotechnology and Chronobiological Engineering*. Ed Scheving LE, Halberg F, Ehret CF. NATO ASI Series E, Marinus Nijhoff, Dordrecht, 1987; pp 373-379.
23. Hullin DA, Woodhead JS. The role of the laboratory in antenatal alphafetoprotein screening programs. *J. Clin. Immunoassay* 1987; **10**: 200-209.
24. Woodhead JS, Brown RC, Aston JP, Weeks I. Immunochemiluminometric assays. In *Complementary Immunoassays*. Ed Collins WP, John Wiley, Chichester, 1988; pp 181-190.
25. Weeks I, Woodhead JS. Chemiluminescence Immunoassay. In *ELISA and other solid phase immunoassays*. Ed Kemeny DM, Challacombe SJ. John Wiley, Chichester, 1988; pp 265-278.
26. Woodhead JS, Aston JP, Brown RC, Weeks I. Monoclonal and polyclonal antibodies for immunoassay. In *Clinical Applications of Monoclonal Antibodies*. Ed. Marks V, Hubbard R. Plenum, New York, 1989; pp 61-68.
27. Weeks I, Woodhead JS. Monoclonal antibodies in chemiluminescent assays. In *Clinical Applications of Monoclonal Antibodies*. Ed Marks V, Hubbard R. Plenum, New York, 1989; pp 69-80.
28. Woodhead JS, Weeks I. Magic Lite design and development. *J. Bioluminescence Chemiluminescence* 1989; **4**: 611-614.
29. Woodhead JS. The measurement of circulating parathyroid hormone. *Clin. Biochem.* 1990; **23**: 17-21.
30. Woodhead JS, Herbert SA, Weeks I. Immunochemiluminometric screening assays based on acridinium labels and microtitre plate luminometers. In *Bioluminescence and Chemiluminescence: Current Status*. Ed. Stanley PE, Kricka LJ. John Wiley, Chichester, 1991; pp 167-170.

31. Weeks I, Woodhead JS. Chemiluminescent assays based on acridinium labels. In *Bioluminescence and Chemiluminescence: Current Status*. Ed. Stanley PE, Kricka LJ. John Wiley, Chichester, 1991; pp 553-556.
32. Woodhead JS, Turner G. Accuracy of growth hormone measurements. *Horm. Metab. Res.* 1991; **36** (suppl): 17-20.
33. Woodhead JS. New technology and improved analytical performance: do they always go together? *J. Clin. Immunoassay* 1991; **14**: 235-238.
34. Brown RC, Woodhead JS. Measurement of circulating parathyroid hormone. In *Clinical Endocrinology*. Ed. Grossman, Blackwell, Oxford, 1992; pp 527-531.
35. Woodhead JS. Chemiluminescence Immunoassay: A Review. *J Clin Ligand Assay* 1995; **18**: 49-53.
36. Jackson T, Lucas I, Woodhead JS. Immunometric assays and automation. *J Clin Ligand Assay* 1996; **19**: 121-125.
37. Stark JM, Neale L, Woodhead JS, Jasani B, Johansen KA, Shaw RW. Hypothesis on functional inadequacy of thioredoxin and related systems in preeclampsia. *Hypertension in Pregnancy* 1997; **16**: 35-46.

CASE REPORTS

1. Ghose RR, Jemmett, Winsey HS, Woodhead JS. Pheochromocytoma and hypercalcaemia. *Postgrad. Med. J.* 1976; **52**: 593-595.
2. Woodhead JS, Ghose RR, Gupta SK. Severe hypophosphataemic osteomalacia with primary hyperparathyroidism. *Brit. Med. J.* 1980; **281**: 647-648.
3. Price HV, Woodhead JS. Hypophosphataemic vitamin-D resistant rickets may need phosphate supplements. *Brit. Med. J.* 1982; **284**: 1442-1443.
4. Ghose RR, Woodhead JS, Brown RC. Incomplete suppression of parathyroid hormone activity in sarcoidosis presenting with hypercalcaemia. *Postgrad. Med. J.* 1983; **59**: 572-574.